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TO: Mail Stop Amendment - Commissioner for Patents – U.S. Patent Office

FAX NO.: (571) 273-8300

FROM: Julian F. Santos

DATE: January 8, 2007

MATTER: Serial No. 10/719,890 Filed: October 4, 2002

DOCKET NO.: GLBL040

IN RE APPLICANT OF: Sergei Podshivalov

The following has been received in the U.S. Patent and Trademark Office on the date of this facsimile:

Petition for Extension of Time	X Transmittal Letter
Disclosure Statement & PTO-1449	Fee Transmittal (2 copies)
Priority Document	Deposit Account Transaction
X Reply Brief	X Facsimile Transmission Certificate dated January 8, 2007.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission: 16

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Filing Date	October 4, 2002
First Named Inventor	Sergei Podshivalov
Art Unit	3662
Examiner Name	Ronnie M. Mancho
Attorney Docket Number	GLBL040

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
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- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please identify below):
  Reply Brief

Remarks

Although the Applicants believe no fees are due in connection with this response, the Commissioner is authorized to charge Deposit Account No. 50-3562, for any fees, including extension of time or excess claim fees, required to make this response timely and acceptable to the Office.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Moser IP Law Group		
Signature	Julian F. Santos		
Printed name	Julian F. Santos		
Date	January 8, 2007	Reg. No.	47,917

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PATENT
Atty. Dkt. No.: GLBL040

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Sergei Podshivalov §
§
Serial No.: 10/719,890 § Group Art Unit: 3662
§
Confirmation No.: 3663 § Examiner: Ronnie M. Mancho
§
Filed: October 4, 2002 §
§
For: Method and Apparatus for Distribution of Satellite Navigation Data §

Mail Stop Appeal Brief - Patents
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Date

Angela M. Fiorino
Signature – Angela M. Fiorino

REPLY BRIEF

Dear Sir:

The Appellants submit this Reply Brief to the Board of Patent Appeals and Interferences pursuant to the Examiner's Answer mailed November 7, 2006 ("*Examiner's Answer*"). Although the Appellants believe that no fee is due in connection with this response, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 50-3562 for any fees required to make this response timely and acceptable to the Office.

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STATUS OF CLAIMS

Claims 1-20 are pending in the application and were finally rejected in the Final Office Action mailed December 13, 2005. The rejection of each of the claims 1-20 is presently appealed. A copy of the claims 1-20 presently pending are shown in the attached Appendix.

PATENT
Atty. Dkt. No.: GLBL040

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 6,813,560, issued on November 2, 2004 to van Diggelen et al. ("*van Diggelen*").

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ARGUMENT

THE EXAMINER ERRED IN REJECTING CLAIMS 1-20 BECAUSE VAN DIGGELEN FAILS TO ANTICIPATE ALL THE ELEMENTS OF EACH OF THE CLAIMS.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984). Because *van Diggelen* lacks at least one element of each of the independent claims 1, 11 and 20, namely, the claimed elements directed to the *combined-packet stream, including the functions associated with generating, processing and/or using the combined-packet steam*, the Appellants submit that *van Diggelen* does not anticipate the claimed invention under 35 U.S.C. §102(e).

That is, for example, *van Diggelen* fails to teach or suggest the combination of claimed elements directed to the functions of (i) *processing satellite signals at each of a plurality of reference stations to receive a respective plurality of satellite-navigation-data streams*, (ii) *forming packets, responsive to receiving these satellite-navigation-data streams, to generate a plurality of packetized satellite-navigation-data streams, and (iii) removing duplicate packets from within the plurality of packetized satellite-navigation-data streams so as to generate a combined-packet stream.*

As set forth in the Examiner's Answer, the Office asserted that the "Applicant's argument that the claimed invention is drawn to the limitation 'removes without extracting satellite data' is unsupported in the claims." *Examiner's Answer*, page 13, ¶2. Yet, however, the Office stated "[i]t is not clear what all is meant and encompassed by 'removes without extracting satellite data' [...] The meets and bounds of the limitation cannot be ascertained since it is understood that removal and extraction refer to the same process" (emphasis added). *Examiner's Answer*, page 13, ¶2.

Notwithstanding the Office's apparent contradictory statements[1] and contrary to the Office's understanding, *removal* of duplicate packets from within the plurality of packetized satellite-navigation-data streams so as to generate a combined-packet stream and *extraction* of ephemeris or other satellite parameters from a satellite navigation message are not, and do not refer to, the same process. *See van Diggelen and the present application*, throughout. The

[1] The Appellants note that (i) the Office states that "[i]t is not clear what all is meant and encompassed by 'removes without extracting satellite data';" (ii) "[t]he meets and bounds of the limitation cannot be ascertained since it is understood that removal and extraction refer to the same process," despite the use of different terms; but *in contradiction thereto* nonetheless states (iii) the "Applicant's argument that the claimed invention is drawn to the limitation 'removes without extracting satellite data' is unsupported in the claims."

differences between these processes are clearly evident with only a basic understanding of a satellite-navigation message transmitted from a satellite. As set forth in the Appellant's application:

> "[t]he GPS satellite navigation message is transmitted in 1500-bit frames at 50 bits per second, as defined by ICD-GPS-200C. The 1500-bit frame of each broadcast includes five sub-frames of 300 bits length. The first three sub-frames (i.e., the first 900 bits) *include* the ephemeris information associated with the particular broadcasting satellite. The ephemeris information contains precise satellite orbit and time model information for a particular satellite. The first three sub-frames are identically repeated in each 1500-bit frame for a particular duration. The broadcast ephemeris information is typically valid for two to four hours into the future (from the time of broadcast) and is periodically updated by a satellite control station. The fourth and fifth sub-frames *contain* part of a satellite almanac, which includes coarse ephemeris and time model information for the entire satellite constellation. The contents of the fourth and fifth sub-frames change until the entire almanac is transmitted. The repetition period of the fourth and fifth sub-frames is 12.5 minutes (i.e., the entire satellite almanac is contained in 15,000 bits)" (emphasis added). *The Appellant's specification*, at ¶0003.

Clearly, to obtain the ephemeris, it must be extracted or otherwise obtained from the satellite-navigation message. This, as previously and presently cited by the Appellant for such purpose, is bolstered *van Diggelen*. To begin with, the background of *van Diggelen* states "[c]onventional GPS receivers require an inordinate amount of time to acquire and lock onto the satellite signals." *van Diggelen*, at col. 1, lines 25-26. "Then, once locked, a GPS receiver ***extracts*** telemetry data (almanac and ephemeris) from the signal." *Id.*, at col. 1, lines 26-28. "From these data the GPS receiver can calculate information that enhances its ability to lock onto the satellite signal." *Id.*, at col. 1, lines 28-31. "Once the GPS signal is acquired, the signal strength must remain high while the almanac and/or ephemeris data is ***extracted*** from the satellite signal." *Id.*, at col. 1, lines 32-36.

In addition, *van Diggelen* discusses the GPS Interface Control Document, ICD-GPS-200-B. *Id.*, at col. 5, line 54. The ICD-GPS-200-B, which is a prior version of the ICD-GPS-200C noted above, clearly defines the GPS satellite-navigation message, and in turn, the components thereof, which include ephemeris and almanac information. The ICD-GPS-200-B also provides information for ***extracting or otherwise obtaining (collectively "extracting")*** from the GPS satellite-navigation message the ephemeris, almanac, clock and other information.

Moreover, the detailed description of *van Diggelen*, which the Office cited[2] to support its rejection, states "[t]o obtain all the ephemeris data, three or more tracking stations 104 are needed." *Id.*, at col. 4, lines 4-5. "Each of the tracking stations 104 contains a GPS receiver 126 that acquires and tracks satellite signals from all satellites 106 that are in view." *Id.*, at col. 4, lines 16-18. "The stations 104 ***extract*** the ephemeris information that uniquely identifies the position of each satellite as well as satellite clock information e.g., a 900 bit packet with[in] a GPS signal" (emphasis added). *Id.*, at col. 4, lines 18-21. "The ephemeris information is coupled to the central processing site 108 via, for example, a terrestrial land line network 105." *Id.*, at col. 4, lines 21-23. "[The] central processing site 108 that collects the ephemeris from the tracking stations 104 comprises an ephemeris processor 128 that removes duplicate occurrences of the same **ephemeris**, and provides the latest ephemeris data for redistribution to mobile GPS receivers 114 and 118" (emphasis added). *Id.*, at col. 3, lines 41-46.

Whereas each the reference stations of *van Diggelen* (i) ***extracts*** from satellite signals the entire **ephemeris** model for distribution to its central site, which in turn, removes duplicate occurrences of the entire **ephemeris** model, *the claimed invention* (i) *processes satellite signals at each of a plurality of reference stations to receive a respective plurality of satellite-navigation-data streams*, (ii) *forms packets, responsive to receiving these satellite-navigation-data streams, to generate a plurality of packetized satellite-navigation-data streams, and (iii) removes, without extracting satellite data from the packetized or received satellite-navigation-data streams, duplicate packets from the plurality of packetized satellite-navigation-data streams to generate the combined-packet stream. See, e.g., the Appellant's specification*, at Figures 2 and 3, and supporting specification at ¶0003-0026. This way, the combined-packet stream includes unduplicated packets of satellite-navigation data, from which the satellite data (e.g., ephemeris data, almanac data, ionosphere data, etc.) can be extracted.

For example, the Appellant's specification, with respect to Figure 2, states "[t]he process 200 begins with a satellite navigation data stream 202" (emphasis added). *Id.*, at ¶0015. "The

[2] On page 13 of the Examiner's Answer, the Office, paraphrasing and seemingly mischaracterizing *van Diggelen*, states "the prior art plurality of reference stations 104 collect and process satellite data as ephemeris data (which are in packets). The data is sent to a central processor '108 where duplicates of the ephemeris data are removed (col. 3, lines 31-47). After removal, the data are sent over the internet to mobile users. Therefore, the data sent over the internet using IP protocol are combines (IP) packets (col. 4, lines 16-39). These packets sent over the internet are a combination of packets which are NOT duplicates of each other (col. 3, lines 31-47). The prior art specifically states that the ephemeris data is a 900 bit packet data. The prior art further states that the duplicates of the 900 bit packet data are removed. The prior art further states that the ephemeris (900 bit packets) are processed to compute pseudo range, pseudo range rate, Doppler frequency offset, etc, including removal of duplicates (col. 5, lines 20-54). After the duplicates are removed, the pseudorange models are packed (col. 6, lines 46-48) again and redistributed over the Internet as combined packets.

satellite navigation data stream 202 *comprises* sub-frames of satellite navigation messages broadcast by in-view satellites" (emphasis added). *Id.* "The satellite navigation data stream 202 is provided as input to a packetizer 204" (emphasis added). *Id.* As clearly disclosed, the satellite navigation data stream 202, not just ephemeris extracted from sub-frames of satellite navigation messages, is provided to the packetizer 204.

"The packetizer 204 formats the satellite navigation data stream 202 into a packet stream 206" (emphasis added). *Id.* "In addition, each packet in the packet stream 206 includes a header for identifying the sub-frame carried therein" (emphasis added). *Id.* "The packet stream 206 may be directly output as a reference station data stream 208" (emphasis added). *Id.* "The reference station data stream 208 is provided as input to a concentrator 210" (emphasis added). *Id.*, at ¶0016. "The concentrator 210 processes the reference station data streams to ***remove packets carrying redundant information***" (emphasis added). *Id.* "For example, two of the reference stations may be positioned on the surface of the Earth so as to receive the satellite navigation message from the same satellite [...] [t]he reference station data streams corresponding to these two reference stations will include ***packets*** that define identical sub-frames. The redundant sub-frame is not necessary and may be removed" (emphasis added). *Id.* "The concentrator 210 provides a hub data stream 212 as output" (emphasis added). *Id.* "The hub data stream 212 comprises a packet stream having unique information from the reference stations" (emphasis added). *Id.*

"The hub data stream 212 is provided as input to a concentrator 214" (emphasis added). *Id.*, at ¶0017. "The concentrator 214 operates in a similar manner to the concentrator 210 to generate a server data stream 216" (emphasis added). *Id.* "The server data stream 216 *comprises* a packet stream having unique information from the hubs and the co-located reference station" (emphasis added). *Id.* "The server data stream 216 is provided as input to a decoder 218" (emphasis added). *Id.* "The decoder 218 processes the server data stream 216 to ***extract*** satellite data 220" (emphasis added). *Id.* "The satellite data 220 *comprises* one or more of ephemeris, almanac, ionosphere data, UTC offset, satellite health status, and raw data bits" (emphasis added). *Id.*

By generating the combined-packet stream as claimed, the combined-packet stream is formed so as to include unduplicated satellite-navigation data without having to extracting, and then, remove the satellite data from the packetized or received satellite-navigation-data streams. By generating the combined-packet stream as such, undesirable latency between reception of the satellite signals and the distribution of the satellite-navigation data is reduced. *See, e.g., Id.*, at ¶0005. This is because each of the reference stations need not extract the

satellite data from the satellite-navigation data of the satellite-navigation-data streams.

Instead, duplicate packets of the packetized satellite-navigation-data streams (which include the satellite-navigation data) are removed without extracting the satellite data. This way, the combined-packet stream includes unduplicated satellite-navigation data, from which satellite data can be extracted by decoding such unduplicated satellite-navigation data. Decoding of the unduplicated satellite-navigation data yields only unduplicated satellite data. Accordingly, the combined-packet stream obviates the need for the need for (i) each of the reference stations to extract satellite data from each of the satellite-navigation data received from each of the satellites, (ii) some device to aggregate the extracted satellite data from all the reference stations; and (iii) some device to remove duplicative occurrences of the extracted satellite data.

By reducing the latency between collection and distribution of the satellite-navigation data, operation of a remote receiver using the satellite-navigation data may be enhanced. *See, e.g., Id.* For example, ephemeris in use by a remote receiver may become invalid due to an unhealthy satellite. *See, e.g., Id.* The remote receiver, however, will continue to use the invalid ephemeris for several minutes before receiving updated ephemeris. *See, e.g., Id.* By reducing this latency (i.e., eliminating the time needed by each of a plurality of conventional reference stations to receive satellite-navigation data, extract ephemeris, and store and distribute an entire ephemeris model (e.g., 900 bits)), the amount of time the remote receiver uses invalid ephemeris is reduced. *See, e.g., Id.*

Because *van Diggelen* lacks at least one element of each of the independent claims 1, 11 and 20, namely the claimed elements directed to the *combined-packet stream, including the functions associated with generating, processing and/or using the combined-packet steam*, the Appellants submit that *van Diggelen* does not anticipate the claimed invention under 35 U.S.C. §102(e). In addition, claims 2-10 and 12-19 depend, either directly or indirectly, from one of the independent claims 1 and 11. Because the Appellants contend that *van Diggelen* fails to anticipate the independent claims 1 and 11 for the reasons set forth above, the Appellants further submit that *van Diggelen* likewise fails to anticipate each of the dependent claims 2-10 and 12-19. Thus, the Appellants submit that the claims 1-20 fully satisfy the requirements of 35 U.S.C. §102; and therefore, are allowable. Accordingly, the Appellants submit that the aforementioned rejection should be withdrawn and the claims allowed.

In addition to the foregoing, claims 2, 8, 9, 12, 18 and 19 specifically add to claim 1 or claim 11 the claimed elements "decoding satellite-navigation data from the *combined-packet stream* to generate satellite data." In light of the foregoing, the Appellants submit that *van Diggelen* is entirely devoid of any teaching or suggestion of the claimed *combined-packet*

stream. As such, *van Diggelen* is entirely devoid of any teaching or suggestion of performing any operation to the claimed *combined-packet stream*.

Similarly, claims 3 and 13 specifically add to claim 1 and claim 11, respectively, that the satellite data that is generated by decoding the satellite-navigation data from the *combined-packet stream* comprises any of ephemeris data, almanac data, ionosphere data, universal-time-offset data, satellite-health data, and raw data bits. In light of the foregoing, the Appellants submit that *van Diggelen*, as noted above, is entirely devoid of any teaching or suggestion of the claimed *combined-packet stream*. As such, *van Diggelen* is entirely devoid of any teaching or suggestion of performing any operation to the claimed *combined-packet stream*.

Claims 4-6 and 14-16 specifically add to claim 1 and claim 11, respectively, that (i) each of the packets formed to generate the plurality of packetized satellite-navigation-data streams include a subframe of GPS satellite-navigation messages (claim 4 and 14); (ii) each of the packets formed to generate the plurality of packetized satellite-navigation-data streams include a header having a satellite identifier and time-of week (TOW) value (claims 5 and 15); and (iii) each of the duplicate packets is removed in response to the satellite identifier and TOW value (claims 6 and 16). In light of the foregoing, the Appellants submit that *van Diggelen* is entirely devoid of any teaching or suggestion of such claimed subject matter.

Claims 7-10 and 17-19 respectively add to claim 1 and claim 11 (i) a hub and a position-location server, and the position-location server is operable to receive the combined-packet stream (claim 7 and 17); (ii) that the position-location server is operable to receive one or more additional packetized satellite-navigation-data streams, remove duplicate packets from the combined-packet and additional packetized satellite-navigation-data streams to generate another combined-packet stream, and decode the satellite-navigation data of this other combined-packet stream to generate satellite data (claims 8 and 18); and (iii) that the additional packetized satellite-navigation-data stream is generated by an additional hub and a reference station disposed proximate to the position-location server (claims 9 and 19). In light of the foregoing, the Appellants submit that with respect to claims 7 and 17 *van Diggelen* is entirely devoid of any teaching or suggestion of such claimed subject matter. With respect to claims 8-9 and 18-19, *van Diggelen*, as noted above, is entirely devoid of any teaching or suggestion of the claimed *combined-packet stream*. As such, *van Diggelen* is entirely devoid of any teaching or suggestion of performing any operation to the claimed *combined-packet stream*.

In view of the foregoing, the Appellants submit that *van Diggelen* lacks at least one element of each of the dependent claims 2-10 and 11-19, and therefore, does not anticipate such claims. Accordingly, the Appellants submit that these dependent claims are separately

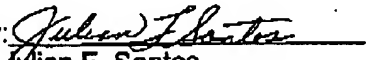
allowable, and request that the rejection be withdrawn and the claims allowed.

CONCLUSION

Thus, the Appellants submit that claims 1-20 are not anticipated under the provisions of 35 U.S.C. §102. Accordingly, the Appellants believe that these claims are presently in condition for allowance. For the reasons advanced above, the Appellants respectfully submit that the rejection of claims 1-20 as being anticipated under 35 U.S.C. §102 is improper. Reversal of the rejection of the Final Office Action is respectfully requested.

Respectfully submitted,
Moser IP Law Group

Date: January 8, 2007

By: 
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CLAIMS APPENDIX

1. (Original) A method of distributing satellite navigation data, comprising:

processing satellite signals at each of a plurality of reference stations to receive a respective plurality of satellite navigation data streams;

forming packets in response to said plurality of satellite navigation data streams to generate a plurality of packetized satellite navigation data streams;

sending each of said plurality of packetized satellite navigation data streams to a processing system;

removing, at said processing system, duplicate packets within said plurality of packetized satellite navigation data streams to generate a combined packet stream; and

sending said combined packet stream into a communication network.

2. (Original) The method of claim 1, further comprising:

decoding satellite navigation data within said combined packet stream to generate satellite data.

3. (Original) The method of claim 2, wherein said satellite data comprises at least one of ephemeris data, almanac data, ionosphere data, universal time offset data, satellite health data, and raw data bits.

4. (Original) The method of claim 1, wherein said plurality of satellite navigation data streams comprises global positioning system (GPS) satellite navigation messages, and wherein each of said packets includes a sub-frame of said GPS satellite navigation messages.

5. (Original) The method of claim 4, wherein each of said packets includes a header having a satellite identifier and a time-of-week (TOW) value.

6. (Original) The method of claim 5, wherein each of said duplicate packets is removed in response to said satellite identifier and said TOW value associated therewith.

7. (Original) The method of claim 1, wherein said processing system comprises a hub, and the method further comprises:

receiving said combined packet stream from said communication network at a position location server.

8. (Original) The method of claim 7, further comprising:

decoding satellite navigation data within said combined packet stream to generate satellite data; and

storing said satellite data in a cache disposed within said position location server.

9. (Original) The method of claim 7, further comprising:

receiving, at said position location server, at least one additional packetized satellite navigation data stream;

removing duplicate packets within said combined packet stream and said at least one additional packetized satellite navigation data stream to generate another combined packet stream;

decoding satellite navigation data within said other combined packet stream to generate satellite data; and

storing said satellite data in a cache disposed within said position location server.

10. (Original) The method of claim 9, wherein said at least one additional packetized satellite navigation data stream is generated by at least one of an additional hub and a reference station disposed proximate to said position location server.

11. (Original) A system for distributing satellite navigation data, comprising:

a plurality of reference stations for processing satellite signals to receive a respective plurality of satellite navigation data streams and forming packets in response to said plurality of satellite navigation data streams to generate a plurality of packetized satellite navigation data streams; and

a processing system for receiving each of said plurality of packetized satellite navigation data streams, removing duplicate packets within said plurality of packetized satellite navigation data streams to generate a combined packet stream, and sending said combined packet stream into a communication network.

12. (Original) The system of claim 11, wherein said processing system includes a processor for decoding satellite navigation data within said combined packet stream to generate satellite data.

13. (Original) The system of claim 12, wherein said satellite data comprises at least one of ephemeris data, almanac data, ionosphere data, universal time offset data, satellite health data, and raw data bits.

14. (Original) The system of claim 11, wherein said plurality of satellite navigation data streams comprises global positioning system (GPS) satellite navigation messages, and wherein each of said packets includes a sub-frame of said GPS satellite navigation messages.

15. (Original) The system of claim 14, wherein each of said packets includes a header having a satellite identifier and a time-of-week (TOW) value.

16. (Original) The system of claim 15, wherein each of said duplicate packets is removed in response to said satellite identifier and said TOW value associated therewith.

17. (Original) The system of claim 11, wherein said processing system comprises a hub, and the system further comprises:

a position location server for receiving said combined packet stream.

18. (Original) The system of claim 17, wherein said position location server comprises:

a processor for decoding satellite navigation data within said combined packet stream to generate satellite data, and

a memory for storing said satellite data.

19. (Original) The system of claim 17, further comprising:

an additional reference station disposed proximate to said position location server for providing at least one additional packetized satellite navigation data stream;

wherein said position location server comprises:

a processor for removing duplicate packets within said combined packet stream and said at least one additional packetized satellite navigation data stream to generate another combined packet stream and decoding satellite navigation data within said other combined packet stream to generate satellite data; and

a memory for storing said satellite data.

20. (Original) An apparatus for distributing satellite navigation data, comprising:

means for processing satellite signals at each of a plurality of reference stations to receive a respective plurality of satellite navigation data streams;

means for forming packets in response to said plurality of satellite navigation data streams to generate a plurality of packetized satellite navigation data streams;

means for sending each of said plurality of packetized satellite navigation data streams to a processing system;

means for removing, at said processing system, duplicate packets within said plurality of packetized satellite navigation data streams to generate a combined packet stream; and

means for sending said combined packet stream into a communication network.